

attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

The claims are amended to more clearly distinguish over the Office Action's interpretation of the references.

Applicant has requested that prosecution be suspended for up to three months so that Applicant will have additional time to prepare an Information Disclosure Statement. The Examiner is requested to consider the information that will be submitted with the Information Disclosure Statement.

A substitute specification, which is a clearer copy of the original specification, is attached hereto as requested in the Office Action.

Applicant makes the following comments regarding the comments included in item 5 on page 6 of the Office Action. While it is true that the disclosed mirror 38X of this application is mounted on the XY-stage 30 (see, for example, Figures 1B and 1C of the present application), the stage 30 is supported by stage base 28 which is supported from the arm 18 by depending blocks 22 and depending bars 26 and 27 (also see Figures 1A). Therefore, and as shown in Figure 1C, elements 92 and 38X are supported by the elements 22, 26, 27 (corresponding to the claimed second support structure). The claims have been amended to more clearly recite this type of structure.

Claims 34-57, 59-63, 65-67, 69-97, 99, 100, 102-107, 109, 110, 112, 114-124, 126, 127, 129-136, 138-140, 142, 144-154, 156 and 157 stand rejected under 35 U.S.C. §102(b) over U.S. Patent No. 4,654,571 to Hinds. This rejection is respectfully traversed.

Hinds fails to disclose or suggest the claimed second support structure that is dynamically isolated from the first support structure and has a base member that supports the movable stage, as recited in independent claims 34, 72, 104 and 133. In addition, Hinds fails

to disclose or suggest a position detector that cooperates with the first mirror and is supported by the second support structure as recited in independent claims 34 and 104.

In Hinds, reaction forces exist in the structure having the table surface 20, which is a surface of the structure that supports the movable stage of Hinds. In addition, the interferometers of Hinds are fixed to the structure having the table surface 20.

Accordingly, Hinds does not disclose or suggest the above-noted features of independent claims 34, 72, 104 and 133. Thus, the independent claims and their dependent claims are patentable over Hinds. Withdrawal of the rejection is requested.

Claims 58, 98, 108, 137 stand rejected under 35 U.S.C. §103(a) over Hinds in view of U.S. Patent No. 4,803,712 to Kembo et al. This rejection is respectfully traversed.

These claims are patentable at least for the reasons set forth above with respect to their independent claims. Thus, it is not necessary to further comment on the rejection of these claims.

Claims 34, 63, 64, 67, 68, 72, 101, 104, 110-114, 125, 127, 128, 133, 139-145 and 155 stand rejected under 35 U.S.C. §103(a) over U.S. Patent No. 4,980,718 to Salter et al. or over Salter et al. in view of Hinds. These rejections are respectfully traversed.

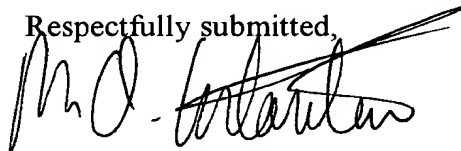
For reasons similar to those set forth above with respect to Hinds, the independent claims of the present application are patentable over Salter et al. alone, or in view of Hinds.

Applicant submits that newly-added independent claim 158, as well as its dependent claims 159-171, also are patentable over the applied references.

In view of the foregoing, Applicant submits that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number set forth below.

Respectfully submitted,



Mario A. Costantino
Registration No. 33,565

MAC/ccs

Attachments:

Appendix
Substitute Specification
Amendment Transmittal
Request for Continued Examination
Petition for Extension of Time

Date: December 6, 2002

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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APPENDIX

Changes to Claims:

Claims 45, 46, 51, 79, 84-86, 105, 114, 115, 118, 119, 124-129, 134, 135, 144, 145, 148, 149, 155 and 156 are canceled.

Claims 158-171 are added.

The following is a marked-up version of the amended claims:

34. (Twice Amended) A method of making a microlithography system that forms an image onto an object, comprising the steps of:

providing an irradiation apparatus that irradiates the object with radiation to form the image on the object;

providing a movable stage associated with the irradiation apparatus, the movable stage having a first mirror;

providing a first support structure;

providing a second support structure dynamically isolated from the first support structure, the second support structure including a base member that supports the movable stage;

providing a drive having a first portion connected to the movable stage and a second portion connected to the first support structure to move the movable stage in a two-dimensional plane such that a reaction force exerted by the movement of the movable stage is transferred to the first support structure, the second portion of the drive not contacting the movable stage; and

providing a position detector that cooperates with the first mirror to detect a position of the movable stage in the two-dimensional plane, the position detector being supported by the second support structure.

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42. (Amended) A method according to claim 36, wherein the position detector projects a light beam to ~~at~~the first mirror fixed to the movable stage and to a second mirror fixed to the projection system.

47. (Amended) A method according to claim ~~46~~43, wherein the ~~second support structure includes a base member, and the~~ guideless stage is movable over a surface of the base member on a bearing.

52. (Amended) A method according to claim ~~51~~34, wherein ~~the second support structure includes a base member, and the~~ substrate stage is movable over a surface of the base member on a bearing.

72. (Twice Amended) An image forming method that forms an image onto an object, comprising the steps of:

moving a stage in a two-dimensional plane of a base member by a driver, the driver having a first portion connected to the stage and a second portion not connected to the stage;

transferring a reaction force caused by the movement of the stage to a first support structure, the first support structure connected to the second portion of the driver;

detecting a position of the stage in the two-dimensional plane by a position detector that is supported by a second support structure dynamically isolated from the first support structure, the second support structure supports the stage and the base member; and

forming the image onto the object by movement of the stage.

80. (Amended) A method according to claim ~~79~~77, wherein the second support structure has a first portion that supports the stage, and a second portion that supports the projection system.

87. (Amended) A method according to claim ~~86~~83, wherein ~~the second support structure includes a base member and~~ the guideless stage is movable over a surface of the base member on a bearing.

91. (Amended) A method according to claim ~~85~~72, wherein the stage is a substrate stage on which the object is supported.

92. (Amended) A method according to claim 91, wherein ~~the second support structure includes a base member and~~ the substrate stage is movable over a surface of the base member on a bearing.

104. (Twice Amended) A method of making a positioning apparatus that positions an object, comprising the steps of:

providing a movable stage that holds the object, the movable stage having a first mirror;

providing a first support structure;

providing a second support structure dynamically isolated from the first support structure, the second support structure including a base member that supports the movable stage;

providing a drive having a first portion connected to the movable stage and a second portion connected to the first support structure to move the ~~object~~movable stage in a two-dimensional plane such that a reaction force exerted by the movement of the ~~object~~movable stage is transferred to the first support structure, the second portion of the drive not in contact with the movable stage; and

providing a position detector that cooperates with the first mirror to detect a positional information of the object in the two-dimensional plane, the position detector being supported by the second support structure.

116. (Amended) A method according to claim ~~114~~104, wherein the position detector projects a light beam to ~~at~~the first mirror fixed to the movable stage.

117. (Amended) A method according to claim ~~114~~104, wherein the movable stage is a guideless stage having no associated guide member to guide its movement.

120. (Amended) A method according to claim ~~119~~117, wherein ~~the second support structure includes a base member and~~ the guideless stage is movable over a surface of the base member on a bearing.

133. (Twice Amended) A positioning method that positions an object, comprising the steps of:

moving a stage that holds the object in a two-dimensional plane of a base member by a driver, the driver having a first portion connected to the stage and a second portion not connected to the stage;

transferring a reaction force caused by movement of the object to a first support structure, the first support structure connected with the second portion of the driver;

detecting a position information of the object in the two-dimensional plane by a position detector supported by a second support structure dynamically isolated from the first support structure, the second support structure supports the stage and the base member;
and

positioning the object based on a detection result by the position detector.

140. (Amended) A method according to claim ~~139~~133, wherein the step of ~~driving~~moving the object~~stage~~ includes rotating the ~~object~~stage on an axis of the ~~object~~stage.

142. (Twice Amended) A method according to claim ~~139~~133, wherein the step of ~~driving the object comprises moving the object in the two-dimensional plane,~~
including moving the stage includes moving the object in first and second linear directions and rotating the object on an axis of the object.

146. (Amended) A method according to claim ~~145~~133, wherein the step of detecting a position comprises projecting a light beam to a first mirror fixed to the ~~movable~~ stage.

147. (Amended) A method according to claim ~~145~~133, wherein the ~~movable~~ stage is a guideless stage having no associated guide member to guide its movement.

150. (Amended) A method according to claim ~~149~~147, wherein ~~the second support structure includes a base member, and~~ the guideless stage is movable over a surface of the base member on a bearing.

154. (Amended) A method according to claim ~~144~~133, wherein the step of positioning the object comprises moving the ~~movable~~ stage based on a detection result by the position detector.

157. (Amended) A method according to claim ~~156~~133, wherein the first ~~member~~portion is one of a magnet and a coil.